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ABSTRACT

This guide is designed to help ease the educational maze in relation to attention deficit disorder (ADD) and its impact on Utah students. The guide begins with a history of ADD as a medical condition. The report then defines ADD, lists diagnostic criteria, and reviews developments in basic research concerning causes of ADD. A section on special education services for eligible students notes that ADD may not in itself qualify students for special services, but meeting related criteria for behavior disorders, traumatic brain injury, or other health impairments may. A section on educational assessment discusses the importance of multiple methods, multiple evaluators, and multiple settings and describes types of assessment instruments. A section on interventions describes school-based procedures, stimulant medication, and procedures for the home and family to address such behavioral characteristics as reducing impulsivity and decreasing overactivity. A discussion of controversial treatments/interventions and a list of 11 recommendations and conclusions complete the guide. Throughout the text, several "Pointer Boxes" list particular techniques, books, and resource materials that may be helpful. (Contains 50 references.) (JDD)

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A RESOURCE FOR EDUCATORS AND PARENTS

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The Utah Attention Deficit Disorder Guide 1993

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A RESOURCE FOR EDUCATORS AND PARENTS

The Utah Attention Deficit Disorder Guide

1993

Utah State Office of Education
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This document is partially based on State of Iowa and State of Virginia guides and draws on materials from both.

Foreword

Each year, the educational process becomes more difficult for students, educators, and parents. Shrinking educational resources, complex family issues, expanding governmental regulations, competency requirements, school violence, and the increasing numbers of students with special and diverse needs can make today's school experience an educational maze. This Guide is designed to help ease the maze in relation to one of the most common and puzzling medical conditions, Attention Deficit Disorder (ADD).

Most classrooms in Utah have at least one or two students who meet the criteria of attention deficit disorder. Students with the ADD medical condition are generally inattentive, impulsive, and overactive. Utah, with large class sizes, the nation's highest birth rate, and limited educational resources may have particular difficulty with students with ADD. These students are difficult to teach and frequently require a great amount of a teacher's time. Not all students with ADD require special services. However, many of these students are at risk for academic and social failure if they do not receive appropriate services. Yet, most educators receive little or no training about this condition.

This document is a joint effort of the Utah State Office of Education, local school districts, parents, and higher education to provide accurate information about students with ADD. The ADD Guide can be used as a general information guide about the history, definition, and causes of attention deficit disorder. It can also be used as a specific resource guide for assessment and interventions for students with ADD. There are several Pointer Boxes that list particular techniques, books, and resource materials that may be helpful for teachers and parents. The resources listed in the Pointer Boxes are not particularly endorsed by any group or agency, but are suggestions for help. The information included in the report is based on the best currently available research data for students with ADD and their educational needs. However, it should be recognized that this area is educationally controversial and the Guide may not meet the needs of all educators, parents, and students. The ADD Guide is a research-based consensus for the best educational practices.

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History

The ADD medical condition is nothing new. It has probably always been with us. Some researchers have speculated ADD may serve a valuable purpose (Cantwell, 1983). Restless, inattentive, and impulsive individuals may have been the adventurers and explorers of the past. ADD, therefore, may have served the general purpose of population dispersal and exploration.

However, as society has become more industrialized and frontiers have disappeared, ADD has become more of a problematic condition, particularly in the classroom. The Huck Finns of yesterday who disliked school, wanted to float rivers, and smoke corn cob pipes would probably be identified today as the "at risk" students with ADD.

Some early references to ADD-type behavior go back to the turn of the century. William James, in 1890, speculated that the deficits in inhibitory control and inattention were related to each other and caused by the same underlying neurological deficit. Similarly, Stills, a British physician in 1902, described the behavior of 20 children who were resistant to discipline, overactive, inattentive, and excessively emotional. He attributed the change in these 20 children from average to ADD-type behaviors to be the result of genetics, neurological diseases, and brain injury. The link with disease was brought home to America with the encephalitis epidemic of 1917-18 in which hundreds of children were severely affected. Many surviving children developed ADD-types of behavior and speculation was made that neurological damage or minimal brain damage (MBD) caused this condition. The brain injured hypothesis for problematic childhood behaviors was formally presented in 1947 when Strauss and Lehtinen published the book, *Psychopathology and Education of the Brain Injured Child.* Strauss went so far as to imply that childhood behavior problems were de facto evidence of brain injury. This was poor circular reasoning in which the problem behaviors were given as evidence of neurological damage. The assumed neurological damage was then given as a reason for the problem behaviors. Later, the term MBD and the neurological damage theory as the primary cause of ADD, lost much of its support in scientific literature.

A parallel development in the treatment of ADD children occurred in 1937. A physician named Bradley was asked to prescribe some type of medication to reduce severe headaches in students. At the time, Bradley was the attending physician at a residential placement center for disturbed youth. He reasoned that a medication such as amphetamine, which alters blood pressure, could possibly help headaches. The headaches were not improved. However, the teachers at the center reported a dramatic change in the students' behavior. The medication seemed to help students stay on task and behave. One student referred to the medication as, "a joy in my stomach," and another student referred to the medication as "arithmetic pills." Although not commonly prescribed for ADD for several years after Bradley published his work, this was the beginning of stimulant medication therapy for ADD.

In the 1950s and 60s, several theories and approaches were advocated for children with ADD. Dissatisfaction with the term MBD gave way to new descriptions such as hyperkinetic syndrome and the hyperactive child syndrome. Research on causes shifted from brain injury to brain mechanisms, genetics, and the environment. In the 1970s, research on

ADD took a "quantum leap forward" with over 2,000 published studies (Barkley, 1990). Many of these studies were on effective methods of managing and educating students with ADD, particularly with the passage of Public Law 94-142. In the 1980s, the term Attention Deficit Disorder (ADD) was coined by the American Psychiatric Association (1980) for use with their diagnostic criteria. Later in 1987, it was changed to Attention Deficit Hyperactivity Disorder (ADHD). Today the focus is on early identification and intervention for students with ADD which allows them to more fully attain their educational potential.

The remainder of this report will review the newest developments in basic research, definition, practical assessment, effective treatment, and inclusion of parents in the educational process.

Definition

OF ATTENTION DEFICIT DISORDER

The ADD medical condition has been plagued by a series of terms that seem to change as frequently as every two years. Hyperkinetic syndrome, hyperactivity, attention deficit disorder, and attention deficit hyperactivity disorders all reflect the current thinking of educators and clinicians. The American Psychiatric Association's 1980 *Diagnostic and Statistical Manual of Mental Disorders* (DSM III) referred to the condition as Attention Deficit Disorder (ADD). In the 1987 text, DSM III-Revised, the condition is referred to as Attention Deficit Hyperactivity Disorder (ADHD).

For the purposes of this guide, the term ADD is used because of its simplicity, ease of remembering, and acceptance by many parents and educators.

The DSM III-R describes ADD [as a condition with] " . . . developmentally inappropriate degrees of inattention, impulsiveness, and hyperactivity." The term "developmental" suggests that different degrees or levels of inattention, impulsiveness, and hyperactivity would be considered inappropriate at different ages. For example, in preschool, the most prominent feature of ADD may be extreme motor activity such as excessive running and climbing. In older students there is a shift to excessive fidgeting and restlessness. The exact form of inattention, impulsiveness, and hyperactivity may change across age but many essential characteristics last throughout childhood, adolescence, and early adulthood.

One type of attention deficit disorder that is more rare and complex is known as Attention Deficit Disorder Without Hyperactivity (also known in the DSM III-R as Undifferentiated Attention Deficit Disorder). These students show the same lack of attention, but they may not exhibit excessive fidgetiness, impulsivity, and rule-breaking behaviors. These students may quietly sit in a classroom daydreaming in a world to themselves. Some research has shown that students with ADD-without hyperactivity are more liked by their peers and show less oppositional and aggressive behavior. However, students with ADD-without hyperactivity may have more learning problems, exhibit more anxious classroom behaviors, and appear sluggish or lethargic (as reviewed by Barkley, 1990.). No one is sure whether ADD-without hyperactivity is simply a subtype or a milder form of ADD-with hyperactivity. However, students with ADD-without hyperactivity are still at risk educationally and can present substantial challenges to teachers.

PRIMARY CHARACTERISTICS

It is important for educators and parents to understand these three core behavioral characteristics of ADD.

1. **INATTENTION**

   This term refers to an inability to stay on-task for a sustained period of time. Students with ADD are often easily distracted by extraneous stimuli such as a slight noise in the room. It is not uncommon for students with ADD to repeatedly shift their attention from one activity to another. However, it would be a mistake to assume that students with ADD are incapable of attending to a preferred task. A student with ADD may be constantly off task during a math assignment, but pay close attention to a preferred video game. There are repeated research studies that show stimulant medication or good behavior management programs can improve on-task rates of students

with ADD from 30 percent and 40percent to above 80percent (the average range) (Barkley, 1990).

2. **IMPULSIVITY**

If you are impulsive, you act before you think. These are the students who blurt out answers in the classroom before they hear the teacher's complete question. Impulsivity can be a serious problem for students with ADD and often gets them into difficulty both at home and school. They are often described as students who do not listen to instructions, interrupt, intrude, or talk excessively. Students with ADD have approximately twice the accident rate of students without ADD. You can get hurt and into trouble if you act before you think.

3. **OVERACTIVITY**

Students with the ADD medical condition are often described as "hyper" which means they exhibit "too much" motor activity (hyperactivity). These students fidget, squirm, wander, tap objects, or are constantly on the move. However, it is easy to misinterpret or overestimate the actual activity level of students with ADD. For example, if a student without ADD raises his/her hand and asks the teacher if he/she can sharpen a pencil, it seems perfectly normal. The student walks to the pencil sharpener and begins the pencil sharpening activity. However, if a student with ADD suddenly blurts out that her/his pencil needs sharpening and runs up to the sharpener without permission, the teacher may think she/he is overactive and constantly on the move. Yet, for both students it took about the same amount of motor energy to get to the sharpener. One student asked permission. The student without ADD broke several rules and appeared to the teacher to be overactive. This may be more "rule-breaking" than "over activity."

As the structure and rules increase in an environment, students with ADD start to stand out as overactive. Some research studies have shown that it may be impossible to identify students with ADD on a playground (less structured environment); but easy to identify them in a classroom (more structured environment). As the intensity of rules and structure for appropriate behavior increases, the perception of overactivity may increase.

The complete list of diagnostic criteria for ADD from the DSM III-R is listed in Table 1 (American Psychiatric Association, 1987). To be diagnosed as ADD from these criteria requires that at least eight of the 14 listed behaviors are present for a duration of at least six months.

However, it should be recognized that this is a medical definition and may not be complete for educational purposes. This list may not include some *associated characteristics* that are important in the education of students with the ADD medical condition.

Table 1

Diagnostic Criteria for ADHD from the DSM III-R

A disturbance of at least six months during which at least eight of the following are present:

(1) **Often fidgets with hands or feet or squirms in seat (in adolescents, may be limited to subjective feelings of restlessness).**

(2) **Has difficulty remaining seated when required to do so.**

(3) **Is easily distracted by extraneous stimuli.**

(4) **Has difficulty awaiting turn in games or group situations.**

(5) **Often blurts out answers to questions before they have been completed.**

(6) **Has difficulty following through on instructions from others (not due to oppositional behavior or failure of comprehension); e.g., fails to finish chores.**

(7) **Has difficulty sustaining attention in tasks or play activities.**

(8) **Often shifts from one uncompleted activity to another.**

(9) **Has difficulty playing quietly.**

(10) **Often talks excessively.**

(11) **Often interrupts or intrudes on others; e.g., will butt into other children's games.**

(12) **Often does not seem to listen to what is being said.**

(13) **Often loses things necessary for tasks or activities at school or at home; e.g., toys, pencils, books, assignments.**

(14) **Often engages in physically dangerous activities without considering possible consequences (not for the purpose of thrill-seeking); e.g., runs into a street without looking.**

Note: Consider a criterion met only if the behavior is considerably more frequent than that of most people of the same mental age.

ASSOCIATED CHARACTERISTICS

There are four basic associated characteristics of students with ADD that are important in the management of the condition (Barkley, 1990). They are called associated characteristics because not all students with ADD show these characteristics. However, most of them do, and it is important to understand them to provide an appropriate education for students with ADD. These characteristics include (1) noncompliance, (2) contingency governed traits, (3) academic deficits, and (4) social skills deficits.

1. **NONCOMPLIANCE**

   Parents and teachers commonly complain about the inability or resistance of students with ADD to comply with adult requests (Barkley, 1990). Students with ADD frequently will not respond within a reasonable period of time to a request such as, "Please do your assignment," or "Please clean up your room." The average student not having ADD will respond to an adult request about 70-80 percent of the time. However, many students with ADD respond to approximately 40-50 percent of adult requests causing frustration and consternation.

2. **CONTINGENCY-GOVERNED TRAITS (Self-management)**

   This concept simply means that students with ADD are "governed" by the next thing (contingency) that is attractive or they want in their environment. They have difficulty delaying gratification and are generally not governed by rules either at home or school (Goldstein & Goldstein, 1990). It is usually a frustrating experience to lecture students with ADD about being responsible and delaying gratification. Most students with ADD want it, and want it now. They have problems with self-management of their behaviors.

3. **ACADEMIC DEFICITS**

   A large percentage of students with ADD have difficulty with basic academic subjects. It is estimated that between 40 and 80 percent of all students with ADD have problems with learning or achievement (Barkley, 1990; Hinshaw, 1992). This is especially true with basic academic subjects such as reading, mathematics, and handwriting. Assignments, organization, and homework can be particularly frustrating for parents and teachers.

4. **SOCIAL SKILLS DEFICITS**

   Like academics, learning essential social skills can be problematic for students with ADD (Barkley, 1990). Basic social skills are the critical skills needed for successful social interactions with peers and adults. Frequently, students with ADD are described as uncooperative, easily frustrated, demanding, "bossy," or unable to maintain lasting friendships. They lack the basic social skills of cooperation, problem solving, sharing, or friend making that come naturally to many students without ADD.

No student fits all the characteristics of a predetermined condition like ADD. Each student is an individual with constantly changing behavior. However, a practical definition of ADD can help both parents and educators design appropriate educational programs for students with ADD. The basic ADD characteristics described in this section are listed in Table 2. Assessment and treatment should parallel this definition with services for inattention, impulsivity, overactivity, noncompliance, and deficits in academics, self-management, and social skills.

Table 2

Practical Definition for ADD

Attention Deficit Disorder is a medical condition of inappropriate developmental degrees of:

INATTENTION

The student is off-task, distractible, or shifts attention from one activity to another.

IMPULSIVITY

The student acts before thinking, often interrupts, talks excessively, intrudes, and engages in thrill-seeking behavior.

OVERACTIVITY

The student is overactive, out-of-seat, tapping objects, squirmy, or fidgety.

NONCOMPLIANCE

The student does not follow adult requests in a reasonable period of time often resulting in arguments, delays, or tantrums.

SELF-MANAGEMENT DEFICITS

The student has difficulty delaying gratification and self-managing his/her behavior.

ADADEMIC DEFICITS

The student is academically behind in subjects, has difficulty with organization and completion of class work or homework.

SOCIAL SKILLS DEFICITS

The student has social skills problems that lead to peer rejection. These problems can include poor cooperation, poor friend making skills, resisting peer pressure, and difficulty giving and receiving feedback.

OTHER FACTS ABOUT ATTENTION DEFICIT DISORDER

There are several other important facts that help in understanding students with ADD. First, attention deficit disorder is one of the most common medical conditions of childhood and adolescence. It is estimated that 3-5 percent of the school age population meets the ADD definition (Barkley, 1990). This means that in a class of 35 students there will be one or two students with ADD. In over half the cases, the behaviors that define ADD will start before age four. However, the majority of these students are not identified until they start school. When they are placed in a structured classroom, the student with ADD begins to stand out to teachers and parents. The ADD medical condition seems to affect many more boys than girls. The estimates can vary from three to one, to nine to one (males to females) depending on the study (Ross & Ross, 1976). In the general school population, a commonly accepted rate is six males to every one female, and this rate can vary according to cultural and family conditions (Barkley, 1985).

The range of behaviors of the ADD medical condition can vary from mildly affected students (who require little or no services), to severely affected students (who require extensive services). The general course of the ADD medical condition from pre-

school to adulthood is a persistent condition in which the core symptoms may vary in form but persist across time. For example, the overactivity of the preschool years may give way to poor attention, noncompliance, and impulsivity during preadolescence; which may then shift to school failure, lying, and social problems in adolescence (Barkley, 1990). Adolescent students with ADD are also more at risk for school drop out, substance abuse, and clinical depression than the general school population. Early signs that predict poor outcomes include aggression, school failure, and poor parent relationships (Barkley, 1990; Paternite and Loney, 1980). However, the outcome can be good with early intervention and a close working relationship between schools and families. Father involvement, parents that are positive but set consistent limits, supervision after school, and positive school experiences are all indicators of an improved outcome (Barkley, 1985; Weiss and Hechtman, 1986). In the long term, approximately one-third of the students identified with ADD continue to show some signs of this condition in adulthood.

THE RELATIONSHIP OF ATTENTION DEFICIT DISORDER TO OTHER CONDITIONS

As with most behavioral conditions of childhood and adolescence, ADD does not always occur alone. Other problematic conditions can compound the ADD disorder and make the education process even more difficult. Here are several of these conditions.

LEARNING DISABILITIES

Not all students with learning disabilities (LD) are ADD. But a substantial percentage (estimates vary from 10-33 percent) of students with ADD exhibit the primary characteristics which meet the eligibility requirements of learning disabilities (Hallahan, 1989; Shaywitz & Shaywitz, 1987). The federal and state LD definitions require, among other criteria, demonstration of a significant discrepancy between achievement and intellectual ability. Using conservative assessment approaches, 19-26 percent of students with ADD have a significant discrepancy in either math, reading, or spelling (Barkley, 1990). However, this is a very limited estimate because of the strict requirements of the LD definition. The estimate balloons to 40-80 percent when students with ADD are assessed as academic underachievers and slow learners (Hinshaw, 1992).

SPEECH AND LANGUAGE DISORDERS

Delays in the onset of early language, speech problems (dysfluencies and articulation problems), and expressive difficulties occur in moderately higher rates for students with ADD. Students with ADD have fewer difficulties with receptive language (understanding what is said to them) as opposed to expressive language (producing language). Estimates vary, but 10-54 percent of students with ADD have speech problems compared to 2-25 percent of students without ADD (Barkley, 1990).

COGNITIVE AND INTELLECTUAL ABILITIES

Students with ADD generally perform poorly on tests of intelligence and cognitive abilities when compared to students without ADD or their own family siblings. They score an average of seven to 15 points less than these two comparison groups on standardized intelligence tests, however, they generally score within the average range. It is unclear whether these differences are real, or simply differences of inattention and impulsivity which result in poor test taking behavior (Barkley, 1990).

EMOTIONAL DISTURBANCE

Emotional disturbances can be a confusing and difficult concept for most parents and educators. Clinically, the term "emotional disturbance" gener-

ally refers to problems such as anxiety, depression, low self-esteem, or conduct problems. Educationally, the term "seriously emotionally disturbed" is a specific federal definition that qualifies students for special education services. This federal definition is given in Table 3.

How students with ADD qualify under this federal definition will be discussed later in this document. However, the clinical overlap between ADD and emotional disturbance (ED) is extensive.

The estimate for students with ADD is that 44 percent have at least one additional emotional problem, 32 percent have two, and 11 percent have at least three. Overall, the approximate overlap between ED and students with ADD is 30-65 percent (Loney, 1987; Pelham & Murphy, 1986). A significant percentage (17-50 percent) of this overlap with ADD is with depression, anxiety, and mood disorders. The percentages vary for males and females, but they generally increase in adolescence.

Similarly, there is a significant overlap between ADD and the disruptive conditions such as oppositional and conduct disorders. Frequently, students with ADD are described as stubborn, noncompliant, aggressive defiant, argumentative, and have tantrums. Approximately 40 percent (chil-

Table 3

Federal Definition

of Serious Emotional Disturbance*

(i) The term means a condition exhibiting one or more of the following characteristics over a long period of time to a marked degree, which adversely affects a child's educational performance:

(A) An inability to learn which cannot be explained by intellectual, sensory, or health factors.

(B) An inability to build or maintain satisfactory interpersonal relationships with peers and teachers.

(C) Inappropriate types of behaviors or feelings under normal circumstances.

(D) A general pervasive mood of unhappiness or depression; or

(E) A tendency to develop physical symptoms or fears associated with personal or school problems.

(ii) The term includes schizophrenia. The term does not apply to children who are socially maladjusted, unless it is determined that they have a serious emotional disturbance.

* Federal Register/Vol. 57, No. 189, September 29, 1992, pg. 44802

dren) to 65 percent (adolescents) of students with ADD meet the clinical criteria for oppositional disorder, and 21 percent (children) to 50 percent (adolescents) will meet the criteria for conduct disorder (Barkley, 1990).

TOURETTE SYNDROME

This is a neurologically based, multiple tic disorder (motor and vocal tic) that can occur with ADD. Tourette syndrome generally includes an involuntary motor tic such as eye blinking, face twitches, arm or leg movements, hopping, and skipping. The involuntary vocal tics usually involve throat clearing, grunts, barks, clicks, grunts, or uttering obscenities (coprolalia). It is estimated that 40-60 percent of Tourette syndrome children also meet the definition for ADD (Comings and Comings, 1984). However, the reverse is <u>not</u> true (40-60 percent of students with ADD do not meet the Tourette syndrome definition). The overlap between Tourette and ADD is important for treatment. Some research shows that Tourette children should not be treated with stimulant medication or it may accelerate the acquisition of tics or exacerbate the tic problem.

OTHER CONDITIONS

There are several other complicating conditions and problems that make working with students with ADD an educational challenge. It is estimated that 50 percent of students with ADD have social problems with other students (Pelham & Bender, 1982). These problems take the form of social rejection and frequently result from students with ADD being socially domineering, intrusive, noncooperative, and noisy. Students with ADD have more problems with sleep than students without ADD. These problems include taking more time to fall asleep (56 percent), frequent night wakening (39 percent), and being tired upon waking (55 percent). Many students with ADD also have minor motor problems (52 percent of ADD compared to 35 percent of nonADD) that results in motor delays, poor coordination, and being described as "clumsy." Poor motor coordination, lack of attention, and impulsivity may help explain the substantially higher accident rate of students with ADD.

Causes

OF ATTENTION DEFICIT DISORDER

The etiology of ADD is second only to treatment in generating controversy between professionals and confusion for parents. However, some facts are clear about the causes of ADD. First, parents do not cause this disorder through the psychological or social environment. Second, there are probably multiple causes of ADD and some of these can overlap. Third, ADD is a biologically caused condition that may affect the educational progress of a student. Fourth, although ADD is a multiply caused biological condition, there are several environmental factors that can make the condition significantly worse.

GENETIC AND BIOLOGICAL FACTORS

Recent research has shown a direct link between ADD and a genetic transmission of the condition. The incidence rate of ADD is much higher in identical twins in comparison to family siblings which suggests a genetic transmission. What the exact mechanism is that is inherited is difficult to currently determine. Such inherited traits as basic temperament which can be identified in infants (2 to 3 months old) may play a substantial role. Some research (Chess & Thomas, 1983) has shown that 10 percent of new born infants may be "difficult temperament" infants (irregular body functions, withdrawn, slow to adapt, intense reactions, negative mood). This is in comparison to 40 percent who are "easy temperament" infants (regular body functions, outgoing, fast to adapt, low intensity of reactions, positive mood). "Difficult temperament" babies are very difficult to raise and 70 percent have behavior problems (similar to ADD behaviors) in later childhood and adolescence. Only 18 percent of the easy temperament babies had any difficulty in childhood and adolescence. Temperament is largely inherited and may predispose a child to ADD-type behaviors.

Other innerited characteristics include the neurochemistry of brain functioning. There have been various conflicting theories either of under or over arousal caused through brain chemistry that result in ADD. To date, little actual evidence has accumulated to support any of these theories. One exception is the positron emission tomography (PET Scan) research that shows significant differences between ADD and nonADD individuals' brain utilization of glucose as an energy source (Zametkin, Nordahl, Gross, King, Semple, Rumsey, Hamburger, & Cohen, 1990). Subjects with ADD had a lower utilization of glucose that may account for some behavioral differences. Other biological problems such as birth complications, traumatic brain injury, allergic reactions, subtoxic heavy metal exposure, or reactions to food additives may result in only a small percentage of diagnosed ADD cases.

ENVIRONMENTAL AND PSYCHOLOGICAL FACTORS

Pollution, overcrowding, poverty, family adversity, divorce, dysfunctional parenting skills, and a poor school environment may contribute or make behaviors worse, but they are unlikely to be a primary cause of ADD. There is "... little if any evidence that supports the notion that ADHD can arise purely out of social or environmental factors such as poverty, family chaos, diet, or poor management of children" (p. 105) (Barkley, 1990). If these conditions are improved, the problematic behaviors are also likely to improve. However, ADD is rarely cured. The ADD behaviors are managed through consistency and appropriate interventions.

Special Education Services

FOR ELIGIBLE STUDENTS WITH DISABILITIES AND ATTENTION DEFICIT DISORDER

There are several basic questions concerning ADD and access to special education services. Does a diagnosis of ADD qualify a student for special education services? Who should make the diagnosis and recommendations? Does the ADD medical condition automatically qualify a person for services under the federal special education law — the Individuals with Disabilities Education Act (IDEA) or under section 504 of the Rehabilitation Act of 1973? What are the implications for schools and families of students with ADD?

Several groups such as CH.A.D.D. (Children with Attention Deficit Disorders) and A.D.D.A. (Attention Deficit Disorders Association) supported inclusion of ADD as a separate special education category in the amendments defining IDEA legislation. However, there were several professional and educational groups (e.g., Council for Exceptional Children, American Association of School Administrators, National Association of School Psychologists, Council of Chief State School Officers, and the National School Boards Association) that opposed the inclusion of ADD as a separate disability category. Although ADD was not included in the IDEA legislation, Congress took two significant actions to solicit information for future action. First, in 1991, it authorized funds for four national centers to study the research literature on the current practices for identification, assessment, and intervention of ADD. These centers will act as clearing houses of information for educators, parents, and other professionals. Second, the act required the U.S. Department of Education to solicit input on the special education of students with ADD, specifically, qualifying for services, the need for special education services, and what services are currently provided.

It should be noted that assessment and services cannot be denied a student simply because he/she has a medical diagnosis of ADD. Similarly, having the medical diagnosis of ADD does not automatically qualify a student with ADD for special education or related services or school districts ". . . may not refuse to evaluate the possible need for special education and related services of a child with a prior medical diagnosis of ADD solely by reason of the medical diagnosis. However, a medical diagnosis of ADD alone is not sufficient to render a child eligible for services under Part B" (p. 4) (U.S. Department of Education Memorandum to Chief State School Officers, 1991).

STATE LAW AND REGULATIONS

Like the federal regulations, Utah's current draft of the *State Board of Education Special Education Rules* (April 1992) does not specifically list Attention Deficit Disorder, Hyperactivity, or Attention Deficit Hyperactivity Disorder as a recognized student disability that solely qualifies for special education services. Merely being labeled ADD by a physician does not automatically qualify a student for special education services. To qualify for these services, a student with ADD medical condition must match the criteria of one of several disability categories outlined in the *State Board of Education Special Education Rules* (Draft, 1992). Matches to the various disability criteria are made through prescribed assessment procedures that are outlined in the ADD assessment section of this document.

BEHAVIOR DISORDERS

Many students with the ADD medical condition who receive special education services, also meet the criteria for the Behavior Disorder category in the Utah Special Education

Table 4

Behavior Disorders Category

BEHAVIOR DISORDERS A student whose behavior or emotional condition over a long period of time and to a marked degree adversely affects his/her educational performance. The first step in referring a student for special education services is the documentation by the LEA of the specific results of a history of failed classroom interventions which, however appropriate, proved ineffective. Documentation of specific results of failed appropriate interventions must also accompany referrals to more restrictive settings.

a. Behavior disorders is used as a generic term to cover two types of behavior difficulties which are not mutually exclusive but which adversely affect educational performance.

   (1) **Externalizing** refers to behavior problems that are directed outwardly by the student towards the social environment and usually involve behavioral excesses.

   (2) **Internalizing** refers to a class of behavior problems that are directed inwardly and often involve behavioral excesses.

NOTE: The above definition describes students who are severely emotionally disturbed *as defined under the Severely Emotionally Disturbed Section in 34 CFR 300.5 regulations under IDEA-B.* The definition also includes students who are schizophrenic but does not include students who are socially maladjusted, unless it is determined that they are behavior disordered.

Rules. In other states, this category is also known as the Seriously Emotionally Disturbed category. A description of the Behavior Disorder category is given in Table 4.

It is important to note that a student with the ADD medical condition qualifies for service under this category if, "A student's behavior or emotional condition over a long period of time and to a marked degree adversely affects his/her educational performance" (p. 60). For example, if the student's academic performance or school social adjustment is seriously affected by ADD behaviors, then the student could qualify. The "long period of time" for the adverse affect may be interpreted as at least six months. The "marked degree" measure of adversely affecting performance could be interpreted as performing significantly below expected ability on standardized tests or in comparison to chronologically matched peers.

It should also be noted, that there are several disclaimers that must be ruled out before a student with the ADD medical condition qualifies under this category. First, the ADD behaviors cannot be primarily a result of a sensory handicap such as vision or hearing impairment. Second, the ADD behaviors cannot be primarily a result of intellectual impairment (mental retardation) or a learning disability. Third,

the ADD behaviors cannot be primarily a result of an inappropriate classroom discipline system or inappropriate academic instruction or materials. This last set of disclaimers is particularly important for students with ADD. If the regular education teacher does not have an adequate classroom management system (i.e., rules, planned consequences, performance feedback to students), then the student with ADD should not be referred for evaluation for special education services. The regular education teacher should first implement an effective classroom management system. Similarly, if the classroom instructional materials or techniques are inappropriate causing the student with ADD to become frustrated and behave inappropriately, then the student should not be referred for evaluation for special education services. Adjustments should first be made in the regular classroom's instructional techniques to accommodate the student with ADD.

Table 5

Other Health Impairment Categories

OTHER HEALTH IMPAIRMENTS: A student who exhibits limited strength, vitality, or alertness, due to chronic or acute health problems such as a heart condition, tuberculosis, rheumatic fever, nephritis, asthma, sickle cell anemia, hemophilia, epilepsy, lead poisoning, leukemia, or diabetes to such a degree that it adversely affects a student's educational performance.

NOTE: The above definition *describes* students demonstrating other health impairments as described in *IDEA-B (34 CFR 300.5), and the Utah Guidelines and Procedures for Serving Students with Special Health Care Needs.*

OTHER HEALTH IMPAIRED

This disability category relates to other health impairments that adversely affect a student's educational performance. The definition from the most current draft of the *Utah Special Education Rules* is given in Table 5.

This category allows students to qualify for special education or related services based on the behavioral characteristics of ADD, especially "alertness." Clearly, the definition of ADD includes impaired alertness as its central defining characteristic which can also be described as poor attention, off-task, or inattentiveness. Under the Other Health Impaired category, ADD is recognized as a "chronic health or acute health problem which results in limited alertness . . . " (p.3) (U.S. Department of Education Memorandum to Chief State School Officers, 1991). If this limited alertness adversely affects educational performance, then the student with ADD qualifies under the Other Health Impaired Category. To further clarify the issue, Table 6 includes an excerpt from the March-April 1991 issue of *OSERS News Update*, a publication of the Federal Office of Special Education and Rehabilitative Services (OSERS).

Table 6

OSERS News Update

The department of Education is committed to ensuring that all children who have a disability and are in need of special education and related services are properly identified and evaluated and receive all the rights and protections that they are entitled to under Part B of the Individuals with Disabilities Education Act (IDEA)... Children with ADD may be considered disabled solely on the basis of this disorder within the other health impaired category in situations where special education and related services are needed because of ADD. In addition, children with ADD may have a concomitant problem such as serious emotional disturbance or learning disabilities and qualify under one of these disability categories (p.2).

TRAUMATIC BRAIN INJURY

This is a new category in the *Utah Special Education Rules* and relates to students who have suffered a traumatic brain injury. This injury can be external such as head injuries from automobile or bicycle accidents or internal such as a stroke or aneurysm. The requirements for this category are listed in Table 7.

A small number of students with ADD-type behavior could qualify under this category if their behavior was directly linked to a head injury. For example, a student would qualify if a student's behavior prior to the head injury was average (no special education services required) but after the injury there was a significant increase in inattentiveness, impulsivity, hyperactivity, poor judgment, and poor problem-solving skills which adversely affects educational performance. Traumatic brain injury has a specific disclaimer...the injury cannot be due to congenital (from birth), degenerative (slowly deteriorating - cause probably unknown), or birth trauma.

Table 7

Traumatic Brain Injury

DEFINITION

"Traumatic Brain Injury" (TBI) means an acquired injury to the brain caused by an external physical force, resulting in total or partial functional disability or psychosocial impairment, or both, that adversely affects a child's educational performance. The term applies to open or closed head injuries resulting in impairments in one or more areas such as cognition; language; memory; attention; reasoning; abstract thinking; judgment; problem solving; sensory, perceptual and motor abilities; psychosocial behavior; physical functions; information processing; and speech. The term does not apply to brain injuries that are congenital or degenerative, or brain injuries induced by birth trauma.

Definition from Federal Register/Vol. 57, No. 189, September 29, 1992, pg. 44802

SECTION 504 OF THE REHABILITATION ACT OF 1974

Section 504 is an antidiscrimination law which guarantees equal access by handicapped individuals to federally funded programs. Even if a student with the ADD medical condition does not qualify under any of the disability categories listed for IDEA or the *Utah State Board of Special Education Rules-Draft* (1992), the student may qualify under Section 504. Although ADD is not specifically listed in Section 504, it is generally recognized that it is covered in the law's general definition of mental or psychological disorder. To clarify ADD coverage under Section 504, the following is an excerpt from the U.S. Office of Civil Rights (OCR) case ruling (Grosseile (MI) Township Schools (17 EHLR 878) in Table 8.

Table 8

Section 504 and ADD Students

...OCR has determined that a district discriminates against students who have ADD/ADHD or who are suspected of having ADD/ADHD, and who are not suspected of having a handicap recognized by the IDEA, by not referring them for an evaluation to determine whether, under Section 504, they are handicapped and in need of regular or special education and/or related aides and services.

Educational Assessment

OF STUDENTS WITH MEDICAL DIAGNOSIS OF ADD

Educational assessment or evaluation is simply defined as structured information gathering that leads to decisions about diagnosis, disclaimers, placement, interventions, and evaluation of student progress. Educational assessment is not strictly one method of collecting information such as using one specific type of test. Rather, good educational assessment involves the use of multiple methods such as interviewing, collecting work samples, behavior checklists, observation, using standardized tests, and other methods. However, educational assessment can waste educational resources for students with ADD if it does not primarily relate to securing needed services and evaluating the progress of a student with ADD (educational assessment that is not well performed, does not relate to service or the evaluation of progress, or is speculative and primarily concerned with the cause of the ADD condition).

Well performed educational assessment services for students with ADD include several components. First, the measures should be well **standardized** with good **reliability** and **validity** characteristics. Standardization means there is a similar group of students who have also taken the test and can be used as an objective comparison group. The standardization group can help decide how similar or different the student with ADD is from the "average" nondisabled student of the same sex and age. Reliability is a measure of **consistency** of an educational assessment method. An educational assessment method with poor reliability will give different or variable scores when it is used on the same student. Validity is a measure of educational assessment **reality**. The question should be asked, Does the educational assessment method really measure what it purports to measure? For example, if a behavior checklist advertises that it validly identifies students with ADD, but misses a substantial number, then it would be considered to have poor validity.

Three other educational assessment components are important to the adequate educational assessment of students with ADD. The first component is **multiple methods** of educational assessment. We can be sure of a finding if it incorporates several different educational assessment methods (i.e., checklists, observations, interviews) that give like results. Similarly, we can be sure of an educational assessment outcome if **multiple evaluators** give us corresponding results using the same educational assessment instruments. For example, if two teachers and two parents have similar results on a behavior checklist used to identify students with ADD, then the result is probably real. **Multiple settings** is a critical concept in educationally assessing students with ADD, because their behavior can vary greatly in different settings. For instance, the student with ADD may be indistinguishable from other students on the playground, highly distractible during math assignments, and mildly inattentive and fidgety during school assemblies. A one-setting evaluation is error prone. Students with ADD are notorious for being "angels" in the pediatrician's office during the ADD evaluation, and truly ADD in the car going home. Multiple methods, multiple evaluators, in multiple settings are excellent educational assessment methods for students with ADD. A more detailed description of best practice educational assessment techniques is available in the *Utah State Office of Education's Handbook for Assessment of Behavior Disorders.*

Parents and teachers should be informed consumers of educational

assessment information for students with ADD. The critical educational assessment areas for students with ADD include basic identification and diagnosis, assessment of on-task or attention, identification of specific problematic behaviors (classroom and home), assessment of academic abilities, and evaluation of social skills. In addition, parents may want to pursue a more detailed medical evaluation that includes a good medical history, determination of basic developmental milestones, a physical examination, and neurological screening.

INTERVIEWS

Most evaluations of students with ADD start by informally interviewing the parent, teacher, and student. The information gathered by parental interviewing is valuable in obtaining developmental and medical information about the student, parent expectations (what they would like changed), problematic behaviors at home, how the home is organized, techniques and services the parents have tried, and if the parents are willing to work with the school personnel. The parent interview is also ideal in assessing the home resources (rewards the student likes, privileges, etc.) that can be used in a school-home behavior management program.

The teacher interview should focus on the student's current behavior in the classroom, the basic classroom management system, and the teacher's behavioral and academic expectations. Since some qualifying state regulations for special education require documentation of failed classroom interventions, it is good to ask what the teacher has done. It is also a good idea to hold the teacher interview in the classroom and observe for evidence of classroom rules and a behavior management system.

Interviewing the student with ADD can yield information about the student's perspective on reported difficulties (academic, social, and behavioral), the relationship with their parents and siblings, what they enjoy (can possibly be used as an incentive in a management program), what they would like to change, and what they would like to accomplish with a program. Since the incidence of depression is relatively high for students with ADD, the interview is a good opportunity to informally assess the student's affect. However, do not be surprised if the student with ADD blames others for the difficulties or simply reports that nothing is wrong. This is common for students with ADD in interview situations.

BEHAVIOR CHECKLISTS AND RATING SCALES

Behavior rating scales are merely descriptions of many behaviors which an evaluator (parent, teacher, or student) is asked to rate. Most evaluators are asked to rate a specific behavior on its frequency (occurs rarely, occurs sometimes, occurs frequently) or on the degree of the problem (no problem, sometimes a problem, a very difficult problem). These ratings help define the severity of a problem. In addition, many behaviors on the rating scales are related or correlated (i.e., when one behavior is picked by an evaluator the other is also generally picked). These related behaviors form clusters and help define students into specific diagnostic clusters or factors such as ADD, depression, etc.

Good behavior checklists also have standardization groups which allow objective comparisons to help make decisions. For example, when an evaluator rates the checklist behaviors for a student, an actual number or score is obtained. On many checklists, we know the average score for nondisabled students, and this can be compared to the assessed student's score. There is frequently an ADD cut-off score, which, if the assessed student's score is greater, then ADD is likely.

There are several good behavior checklists on the market for use with students with ADD. Many of these checklists have teacher, parent, and student forms for multiple evaluators. The Conner's Parent and Teacher Rating scales is the most commonly

used behavior checklist. This checklist has a specific Hyperkinetic Index with a cut-off score and long and short forms. Second, is the Child Behavior Checklists (CBCL) by Achenbach and Edelbrock (1983, 1991). This checklist has approximately 118 items with teacher, parent, youth report, and observation forms. The parent CBCL has a Hyperactivity Factor, a Social Competence Factor, and several questions to assess the home environment (chores, activities, etc.). An added advantage of the CBCL forms is that a PC computer can be used to help score the checklist and plot the diagnostic profile.

There are several advantages for the use of behavior checklists. First, most behavior checklists are well standardized with good reliability and validity. Second, some forms use multiple evaluators such as parents and teachers. Third, behavior checklists have objective cut-off scores that reduce human interpretations and error. Fourth, behavior checklists utilize statistically derived diagnostic factors that help in forming an ADD diagnosis. Fifth, the individually-rated behaviors on the checklist help to identify specific problematic behaviors such as noncompliance, aggression, arguing, and others. Pointer Box 1 gives a list of good behavior checklists that can be useful with students with ADD.

POINTER BOX 1

Behavior Checklists*

FOR USE WITH ADD STUDENTS

BEHAVIOR RATING PROFILE (Teacher Form)
by L. Brown and D. Hammill
Pro-Ed Publishing Co.
5341 Industrial Oakes Boulevard
Austin, TX 78735

CHILD BEHAVIOR CHECKLIST, 1991 Edition
(Teacher, Parent, Youth Report Form)
by T. M. Achenbach
University Associates in Psychiatry
1 South Prospect Street
Burlingtom, VT 05401

CONNERS BEHAVIOR CHECKLIST
by K. Conners
Multi-Health System, Inc.
908 Niagra Falls Blvd.
North Tonawanda, NY 14120-2060

PROBLEM BEHAVIOR CHECKLIST-Revised
by R. Quay
Department of Psychology
University of Miami
Coral Gables, FL 33124

WALKER PROBLEM BEHAVIOR IDENTIFICATION-Revised
(Grades P-6)
Western Psychological Services
12031 Wilshire Boulevard
Los Angeles, CA 90025

*This list is representative, not inclusive.

BEHAVIORAL OBSERVATIONS

The use of behavioral observations is probably one of the best methods of obtaining the most current information on a student with ADD. However, behavioral observation is not merely looking at a student and recording what you see. Good observation techniques require the use of structured methods such as interval, frequency, or time sampling systems with specifically defined codes for the target behaviors. The problem with observation systems is that they can require extensive training and be expensive to collect the data. However, for classification in Utah under the Behavior Disorders category, the *Utah Special Education Rules* require at least three 15-minute observations of the referred student with ADD.

Several school districts in Utah have developed their own observation systems with a response discrep-

Table 9

CODES

FROM RESPONSE DISCREPANCY OBSERVATION SYSTEM

Target									
Student*									

*Classmates of same sex.

NOTE: To observe class — begin with the first same sex student in row 1. Record each subsequent same-sex student in following intervals. Data reflect an average of classroom behavior. Skip unobservable students.

ON-TASK CODES: Eye contact with teacher or task and performing the requested task.

OFF-TASK CODES:

T = Talking-Out/Noise: Inappropriate verbalization or making sounds with object, mouth, or body.

O = Out of Seat: Student fully or partially out of assigned seat without teacher permission.

I = Inactive: Student not engaged with assigned task and passively waiting, sitting, etc.

N = Noncompliance: Breaking a classroom rule or not following teacher directions within 15 seconds.

+ = Positive Teacher Interaction: One-on-one reprimand, implementing negative consequence, or negative gesture.

ancy method developed at Granite School District and the University of Utah (Jewett, Butler, Richards, & Jenson, 1989). This observation system is a simple response discrepancy (i.e., difference between the student with ADD's behavior and peers) method which primarily targets on-task behavior in the classroom. An observer has a set of target behavior codes (see Table 9) for on-task behavior. If the behavior occurs once in a 10-second interval, the behavior is recorded in the interval. If not, the interval is left unscored. However, the identified referred student with ADD is not the only student observed. For each 10-second interval, a random same-sex peer is also observed for the same interval as the student with ADD. A new peer is picked for each new 10-second interval. At the end of the 15-minute observation time, the percentage of on-task behavior for the referred student with ADD is obtained along with the average on-task behavior for the same-sex peers in the classroom. The difference (discrepancy) between the student suspected of having the ADD medical condition and the classroom peer average for on-task behavior helps define the degree of the attention problem.

Granite School District has compiled the average on-task rates for nondisabled peers, behavior disordered students, and learning disabled students; for teacher-directed or in-

seat instructions for kindergarten through twelfth grade. According to this observation system, the average student with behavior disorder is on-task 60 percent or less while the nondisabled peer is on-task on average 70-80 percent of the time. This is a very economical observation system that does not require extensive training. To help, the school district and university have developed a video training tape for this system. Other sophisticated observation systems include the Child Behavior Checklist-Direct Observation Form (Achenbach, 1986); Revised Stony Brook Observation Code (Abikoff, Gittelman-Klein, & Klein, 1977); Classroom Observation System (Whalen, Collins, Henker, Alkus, Adams, & Stapp, 1978); Classroom Observation System (O'Leary, Romanczyk, Kass, Dietz, & Santogrossi, 1979).

ACADEMIC ASSESSMENT

A majority of students with ADD have academic difficulties that range from severe learning disabilities through mild problems with one academic subject. Many students with ADD are slow learners who frequently have problems retaining basic academic information. Their distractibility interferes with following directions, organization, and essential study skills. Academic assessment is crucial but often inadequate for many students with ADD.

The most common form of academic assessment for students with ADD is by standardized achievement tests such as the Stanford Achievement Test and the Peabody Individual Achievement Test - Revised. These tests are adequate for determining global achievement level by grade or age. However, they are inadequate for pinpointing specific academic skills that need remediation. Other types of academic tests that are better at pinpointing academic deficiencies are criterion-referenced academic tests and curriculum-based academic measures. Criterion-referenced tests compare a student with ADD's mastery of a skill against a predetermined standard or criterion. Curriculum-based assessment is the finest grain academic assessment and uses the student's in-class academic curriculum as the actual test materials. A teacher selects increasingly difficult samples or probes from the curriculum materials and administers them to the student with ADD. When the student with ADD fails the probe, this is the point at which instruction should be started for the student. Curriculum-based approaches are very sensitive to improvements and change. They have

POINTER BOX 2

Sources for Curriculum-Based Measurement*

ACADEMIC SKILL PROBLEMS DIRECT
by E. S. Shapiro
Guilford Publications
72 Springs Street
New York, NY 10012

CURRICULUM-BASED EVALUATION FOR SPECIAL AND REMEDIAL EDUCATION
by K. H. Howell & M. K. Morehead
Merrill Publishing Company
Columbus, OH 43216

CURRICULUM-BASED MEASUREMENT: ASSESSING SPECIAL CHILDREN
by M. R. Shinn (Editor)
Guilford Publishing
72 Springs Street
New York, NY 10012

*This list is representative, not inclusive.

the added advantage of using as the testing materials, the very materials that will be used to teach the student with ADD in the classroom. Pointer Box 2 lists resources in curriculum-based assessment. In addition, the Utah State Office of Education and many school districts have developed end-of-unit, curriculum assessments which could be of value.

ACADEMIC PORTFOLIO

One additional source of academic information is important for students with ADD and can be a great asset to parents. This source is simply a file or portfolio of the student's academic work over time. Such a compilation of dated academic work samples is excellent documentation of a student with ADD's academic progress or stagnation. Graded math sheets, writing samples, homework assignments, spelling tests, and curriculum-based reading probes are excellent sources of portfolio academic information. Spread this information out by academic subject in chronological order on a big table to get an overall sense of improvement. If there is a steady improvement in the work samples, then the student with ADD is making progress. If the work samples look basically the same or get worse, then something is wrong.

SOCIAL SKILLS ASSESSMENT

Most students with ADD have problems in social interactions with their peers and adults as well as academic problems. Many of these students have social skills deficits which can be effectively assessed by social skills checklists. These checklists are similar to behavior problem rating scales except they focus on fundamental social skills. They tap such skill areas as conversation skills, giving positive feedback, accepting negative feedback, cooperation, resisting peer pressure, and other skills. Standardized social skills checklists can pinpoint specific deficit areas and give a determination of problem severity. There may be multiple forms that include teachers, parents, and students as multiple evaluators. The results from social skills checklists can be used to program social skills training for students with ADD. Pointer Box 3 gives the sources of several good social skills checklists that can be used with students with ADD.

POINTER BOX 3

Social Skills Checklist*

SCHOOL SOCIAL SKILLS
by L. Brown, D. Black, & J. Downs
Slosson Educational Publications
P.O. Box 280
East Aurora, NY 14052

SOCIAL SKILLS RATING SYSTEM (SSRS)
by F. Gresham & S. Elliott
American Guidance Services (AGS)
Publishers' Building
P.O. Box 99
Circle Pines, MN 55014-1796

WALKER-McCONNELL SCALE OF SOCIAL COMPETENCE AND SOCIAL MALADJUSTMENT
Sopris West, Inc.
1140 Boston Avenue
Longmont, CO 80501

*This list is representative, not inclusive.

OTHER ASSESSMENT METHODS

Several other assessment approaches may be needed in a comprehensive assessment of a student with ADD. Intellectual measures such as the Wechsler Intelligence Scale for Children-III (WISC-III), the Stanford Binet, 4th Edition, or the Kaufman Assessment Battery for Children (K-ABC) are needed for the disclaimer of intellectual disability for the *Utah Special Education Rules*. However, it should be recognized that IQ tests, particularly the WISC-III cannot be used to reliably identify students with ADD. The freedom from distractibility subscales of the WISC-III are unreliable for identification purposes (Barkley, 1990). Problem behavior checklists, interviews, and observations are more reliable and valid.

Other measures such as the Matching Familiar Figures Test to assess impulsivity, the Gordon Diagnostic System (a portable computerized device) to assess sustained attention, and an actometer (a small device to measure movement) are popular clinical measures. However, their practicality for school use which relates directly to placement or interventions of students with ADD is limited. Their functions can be duplicated less expensively by using one or more of the assessment methods already described.

Two promising measures that can be used with students with ADD are the Systematic Screening for Behavior Disorders (SSBD) and the School Archival Record Search (SARS) (Walker, Severson, Todis, & Block, 1992; Walker Block-Pedego, Todis, & Severson, 1991). The SSBD is a multi-gating assessment system that can be used to screen entire schools for behaviorally disordered students which include students with ADD. The SSBD relies on teacher ratings and a final gate or step of observation to identify students. The SARS is a unique approach that involves a systematic normative analysis of a student's cumulative school record to identify disabled students, including students with ADD.

Interventions

FOR STUDENTS WITH ADD

An intervention is a procedure that is designed to improve problem behaviors or remediate skill deficiencies of a student with ADD. The intervention approach should be designed to reduce inattention, impulsivity, noncompliance, and overactivity. A comprehensive intervention program should also improve or build skills in the academic, self-management, and social areas. The three main classes of interventions for students with ADD include (1) stimulant medication, (2) classroom interventions, and (3) procedures for the home and family. It is important to recognize that current treatments do not cure ADD. Instead, the best interventions are designed to manage the most difficult behaviors of students with ADD. If these problematic behaviors are managed, then students with ADD can be given the academic, self-management, and social skills needed to survive in school and later adulthood. School dropouts, substance abuse, legal complications, unemployment, family distress, and other at risk behaviors should substantially decrease with a positive interventions program.

SCHOOL-BASED INTERVENTIONS FOR STUDENTS WITH ATTENTION DEFICIT DISORDERS

In the past twenty years, there has been an explosion of information on school-based interventions for students with ADD. Some effective interventions are as informal as a teacher's caring attitude, encouragement, extra attention, and guidance. These types of teacher behaviors were described by many adults with ADD in a large study as "turning points" in their lives as students (Weiss & Hechtman, 1986). The majority of students with ADD can meet the requirements of regular classrooms with only minor interventions (Pfiffner & Barkley, 1990). A smaller number with significant learning problems, aggression, or oppositional behavior may need more extensive interventions or alternative placements.

"Children with ADD frequently do better with backup consequences or token reinforcement systems (Pfiffner, Rosen, & O'Leary, 1985), and they may function best with a combination of positive programming and negative consequences such as ignoring (Pfiffner & O'Leary, 1987), prudent reprimands (Rosen, O'Leary, Joyce, Conway, & Pfiffner, 1984), response cost (Rapport, Murphy, & Bailey, 1982), or time out with procedural safeguards (Gast & Nelson, 1971) (Iowa Department of Education, 1991) (p.21).

BASIC CLASSROOM REQUIREMENTS

The basic requirements for any classroom (regular or special education) that includes students with ADD are a set of **specific classroom rules** with **preplanned consequences** for following or breaking the rules. It is critically important that most of the feedback given to the student with ADD by the classroom teacher is **positive feedback**. However, specific classroom interventions should parallel the basic definition of the student with ADD. There are several good sources of general information for teachers about ADD and management approaches (see Pointer Box 4).

The following behavioral characteristics are addressed with suggested interventions:

(1) Improving Attention

The on-task behavior of students with ADD can be improved to lev-

POINTER BOX 4

General Sources of Information

ON A.D.D. AND CH.A.D.D. FOR TEACHERS AND PARENTS

ATTENTION DEFICIT HYPERACTIVITY DISORDER: A HANDBOOK FOR DIAGNOSIS AND TREATMENT
by Russell A. Barkley, Ph.D.
The Guilford Press
72 Spring Street
New York, NY 10012

HYPERACTIVITY: CURRENT ISSUES, RESEARCH, AND THEORY
by Dorothea M. Ross & Sheila A. Ross
John Wiley & Sons
Professional and Trade Division
605 Third Avenue
New York, NY 10158-0012

ADHD/HYPERACTIVITY: A CONSUMER'S GUIDE
by Michael Gordon, Ph.D.
GSI Publications
P.O. Box 746
DeWitt, NY 13214

MANAGING ATTENTION DISORDERS IN CHILDREN
by Sam Goldstein & Michael Goldstein
John Wiley & Sons
Professional and Trade Division
605 Third Avenue
New York, NY 10158-0012

IDENTIFICATION AND TREATMENT OF ATTENTION DEFICIT DISORDER
by Nancy Nussbvaum & Erin Bigler
Pro-Ed
8700 Shoal Creek Blvd.
Austin, TX 78758

SOURCEBOOK FOR CHILDREN WITH ATTENTION DEFICIT DISORDER
by Clare B. Jones, Ph.D.
Communication Skill Builders
3830 E. Bellevue/P.O. Box 42050
Tucson, AZ 85733

els of 80 percent or higher with behavior management techniques. The average student with ADD may be on-task 60 percent or less depending on the setting and task. Several programs exist that focus on improving classroom attention. The *Practice Skills Mastery* program (Erken & Henderson 1976) is a packaged program of random audible "beeps" that can be played over a tape recorder in the classroom. Students are rewarded for on-task behavior when a beep occurs and lose points if they are off-task. Research from this program has improved on-task rates to 80 and 90 percent. Pointer Box 5 lists the source of the Practice Skills Mastery Program. Another useful technique to improve on-task behavior is the self-management approach of self-monitoring on-task behavior. With self-monitoring, a student with ADD is taught to monitor and record her/his own on-task behavior. A manual on designing a self-monitoring program with "countoons" is available through the Utah State Office of Education- (USOE) Technical Assistance Manuals - see Pointer Box 6.

(2) Reducing Impulsivity

Reducing impulsive behavior is a difficult problem for most behavior management systems. How-

ever, several good approaches exist. Self-monitoring talking-out, interruptions, and other impulsive behavior is an excellent approach. Some of the basic problem-solving skills taught in social skills programs also can help reduce basic impulsive behaviors (see Pointer Box 8). Many of these programs include self-talk cognitive behavior modification programs that reduce impulsive or nonthinking behaviors. An excellent program for adolescents with ADD is the program *Teaching Self-management Strategies to Adolescents.* This program teaches students to recognize situations that trigger impulsive behaviors and the consequences of these behaviors (Young, West, Smith, & Morgan, 1991) (see Pointer Box 5).

(3) Decreasing Overactivity

The basic hyperactivity that includes out-of-seat behavior, wandering, fidgeting, and wiggling can be reduced with several behavior management packages. First, classroom rules with consequences for out-of-seat and wandering can be very helpful. The approaches listed above that include self-monitoring and random beep tapes are also effective. Two other approaches include home-to-school notes and behavioral contracting can also be very use-

POINTER BOX 5

Classroom Intervention Resources*

FOR STUDENTS WITH ADD

SCHOOL-HOME NOTES: PROMOTING CHILDREN'S CLASSROOM SUCCESS
by Mary Lou Kelley, Ph. D.
The Guilford Press
72 Spring Street
New York, NY 10012

ADHD: A GUIDE TO UNDERSTANDING AND HELPING CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER IN SCHOOL SETTINGS
by L. Braswell, Ph.D., M. Bloomquist, Ph.D., & S. Pederson, M.A.
University of Minnesota, Professional Dev.
207 Nolte Center
315 Pillsbury Drive, SE
Minneapolis, MN 55455-0139

PRACTICE SKILLS MASTERY PROGRAM
by Erkin, N. & Hendersen, H.
Mastery Programs
P.O. Box 90
Logan, UT 84321

TEACHING SELF-MANAGEMENT STRATEGIES TO ADOLESCENTS
by K. R. Young, R. P. West, D. J. Smith, & D.P. Morgan
Sopris West, Inc.
1140 Boston Ave.
Longmont, CO 80501

COPING WITH NONCOMPLIANCE IN THE CLASSROOM: A POSITIVE APPROACH
by Walker, H. & Walker, J.
Pro-Ed
8700 Shoal Creek Blvd.
Austin, TX 78758

TEACHING BEHAVIORALLY DISORDERED STUDENTS
by Daniel P. Morgan & William R. Jenson
Merrill Publishing Co.
A Bell & Howell Information Co.
Columbus, OH 43216

MANAGING ACTING OUT BEHAVIOR
by Colvin, G.
P.O. Box 5633
Eugene, OR 97405-0633

FOUNDATIONS: ESTABLISHING POSITIVE DISCIPLINE POLICIES
by Sprick, R., Sprick, M., & Garrison, M.
Sopris West, Inc.
1140 Boston Avenue
Longmont, CO 80501

*This list is representative, not inclusive.

POINTER BOX 6

Utah State Office of Education
SPECIAL EDUCATION

Technical Assistance Manuals

- Teacher Praise
- Home Notes to Improve Motivation
- Contracting to Enhance Motivation
- Public Posting to Improve Motivation
- Using Group Contingencies to Improve Academic Achievement
- Reprimands and Precision Requests
- Using Time Out Effectively
- Self-Monitoring to Improve Motivation
- Using In-School Suspension Effectively

Produced by:
Students At Risk Section
Utah State Office of Education
Special Education
250 East 500 South
Salt Lake City, UT 84111

ful in reducing overactivity. With a home-to-school note (home notes), the teacher rates a student with ADD on their activity for the day. The note goes home and privileges are given or withdrawn by the parents depending on the teacher's ratings. The USOE Technical Assistance Papers has a manual on designing home notes (see Pointer Box 6) and a book is published for their use with students with ADD by Kelley (1990) (see Pointer Box 5). Behavioral contracting for out-of-seat or wandering is similar to the use of home notes. However, privileges are given or withdrawn in the classroom by the teacher depending on the student with ADD meeting a pre-negotiated level of activity (see Pointer Box 6).

(4) Reducing Noncompliance

A problem with noncompliance is a common characteristic of students with ADD that is highly distressing to most adults. Simply defined, noncompliance is not following an adult's instructions within a reasonable period of time (3 to 10 seconds). Most students without ADD are compliant to approximately 70-80 percent of adult requests. Noncompliant students comply with 40-50 percent or less of adult requests, often resulting in parents and teachers suspecting a hearing loss, inability to attend to instructions, or an information processing problem. More frequently, noncompliance is simply a result of learning not to respond to an adult request. Resistance to compliance can escalate into power struggles involving ignoring, arguing, delays, tantrums, and aggression by the student with ADD.

Reducing noncompliance requires good classroom or home rules and a set of preplanned back-up consequences (positive and mildly reductive). Learning how to make an effective or **precision request** can also significantly increase compliance. This approach is outlined in the USOE Technical Assistance Papers *Reprimands and Precision Requests* (See Pointer Box 6). An additional resource in learning to design and implement preplanned consequences is covered in the programs, *Coping with Noncompliance in the Classroom: A Positive Approach*, (Walker & Walker, 1991) and *Managing Acting Out Behavior* (Colvin, 1992) (see Pointer Box 5).

(5) Decreasing Academic Deficits

Problems with basic academic skills for students with ADD is probably a function of all the behaviors listed above (poor attention, impulsivity, overactivity,

noncompliance). What works with these problematic behaviors should also help to improve basic academic skills. However, just improving attending behavior, whether the intervention is medication or behavior management, is generally not sufficient to improve academic skills. Specific academic programs and strategies are needed.

Students with ADD appear to do their academic best when: (1) academic curriculums have well-sequenced steps that require mastery before movement to the next step, (2) frequent feedback is given about performance, (3) there are multiple opportunities to academically respond, and (4) students with ADD are frequently rewarded for performance. Some of the most promising academic approaches for students with ADD are peer tutoring, cooperative learning, homework programs, and study skills programs. Pointer Box 7 is a list of programs and books designed to enhance academic performance.

(6) Reducing Social Skills Deficits

Like academic deficits, social skills deficits accumulate over several years and can be a major problem for students with ADD. These deficits alienate many students with ADD from their peers

POINTER BOX 7

Academic Programs & Books*

FOR STUDENTS WITH ADD

STRATEGIES AND TACTICS FOR EFFECTIVE INSTRUCTION
by Bob Algozzine & James Ysseldyke
Sopris West, Inc.
1140 Boston Avenue
Longmont, CO 80501

STRUCTURING YOUR CLASSROOM FOR ACADEMIC SUCCESS
by Stan C. Paine
Research Press Company
2612 N. Mattis Avenue
Champaign, IL 61821

LEARNING THROUGH FEEDBACK
by Ron Van Houten, Ph.D.
Human Sciences Press
72 Fifth Avenue
New York, NY 10011

TACTICS FOR TEACHING
by Thomas C. Lovitt
Charles E. Merrill Publishing Co.
A Bell & Howell Company
Columbus, OH 43216

LEARNING TO COOPERATE, COOPERATING TO LEARN
Edited by Robert Slavin, et. al.
Plenum Press
233 Spring Street
New York, NY 10013

TEAM HOMEWORK: COOPERATIVE STUDENT MANAGEMENT OF DAILY HOMEWORK
by D. Olympia, D. Andrews, J. L. Valum, and W. R. Jenson
Sopris West, Inc.
1140 Boston Avenue
Longmont, CO 80501

PEER TUTORING: A GUIDE FOR SCHOOL PSYCHOLOGISTS
by Stewart Ehly
The National Association of School Psychologists
1511 K Street NW
Washington, D.C. 20005

SKILLS FOR SCHOOL SUCCESS: SCHOOL BEHAVIORS AND ORGANIZATION SKILLS
by Archer A. & Gleason, M.
Curriculum Associates
5 Esquire Road
N. Billerica, MA 01862-2589

PROJECT RIDE (RESPONDING TO INDIVIDUAL DIFFERENCES IN EDUCATION)
Sopris West, Inc.
1140 Boston Avenue
Longmont, Colorado 80501

*This list is representative, not inclusive.

and can be a continuous source of difficulty through adolescence. Problems in making and keeping friends, being cooperative, carrying on a conversation, giving both positive and negative feedback, resisting peer pressure, and learning not to be impulsive are at the core of many ADD students' social problems.

There are several excellent social skills packages that are on the market and available to schools. Many of these programs have been extensively researched and evaluated. Good social skills training practices include: (1) using a well-designed and tested social skills curriculum, (2) doing the training in a group format with other students, (3) using video taped examples, (4) over-learning the student in the skill, (5) doing the training at least twice weekly, and (6) assigning the student social skills homework as a generalization technique. A particularly good approach is to simultaneously train the parents or teachers in the same skills that are taught to the students each week. This practice greatly enhances the use of the skills in the home and classroom settings. Pointer Box 8 lists several good programs that can be used with students with ADD in school settings.

POINTER BOX 8

Social Skills Programs*

FOR STUDENTS WITH ADD

GETTING ALONG WITH OTHERS: TEACHING SOCIAL EFFECTIVENESS TO CHILDREN
by Jackson, N. F., Jackson, D. A., & Monroe, D.
Research Press
2612 N. Mattis Avenue
Champaign, IL 61821

SKILLSTREAMING THE ELEMENTARY SCHOOL CHILD
by McGinnis, E. & Goldstein, A. P.
Research Press
2612 N. Mattis Avenue
Champaign, IL 61821

THE WALKER SOCIAL SKILLS CURRICULUM: THE ACCEPTS PROGRAM
by Walker, H. M., et. al.
Pro-Ed Publishing Co.
8700 Shoal Creek Blvd.
Austin, TX 78758

ADOLESCENT COPING CURRICULUM FOR EFFECTIVE SOCIAL SKILLS (ACCESS)
by Walker, H. M., et. al.
Pro-Ed Publishing Co.
8700 Shoal Creek Blvd.
Austin, TX 78758

AGGRESSION REPLACEMENT TRAINING
by Goldstein, A. P. & Glick, B.
Research Press
2612 N. Mattis Avenue
Champaign, IL 61821

THE PREPARE CURRICULUM
by Goldstein, A. P.
Research Press
2612 N. Mattis Avenue
Champaign, IL 61821

SKILLSTREAMING THE ADOLESCENT
by Goldstein, A. P., et. al.
Research Press
2612 N. Mattis Avenue
Champaign, IL 61821

UTAH STATE UNIVERSITY SOCIAL SKILLS PROGRAM
Utah State University
Special Education
Logan, UT 84322

*This list is representative, not inclusive.

POINTER BOX 9

Utah Resources*

ON A.D.D. AND CH.A.D.D. FOR TEACHERS AND PARENTS

CH.A.D.D.
c/o Utah Parent Center
Phone: 272-1051

UTAH PARENT CENTER
2290 East 4500 South, Suite #110
Salt Lake City, Utah 84117
Phone: 272-1051 or
Toll Free: 1-(800)-468-1160

LEARNING DISABILITIES ASSOCIATION OF UTAH
P.O. Box 112
Salt Lake City, Utah 84110
Phone: 355-2881

VALLEY MENTAL HEALTH
145 East 1300 South, Suite #501
Salt Lake City, Utah 84115
Phone: 539-7000

SOCIAL SERVICES
2835 South Main
Salt Lake City, Utah 84115
Phone: 468-5422

ALLIES WITH FAMILIES OF CHILDREN WITH EMOTIONAL, BEHAVIORAL, OR NEUROLOGICAL DISABILITIES
2290 East 4500 South, #110
Phone: (801) 272-1068 or
Toll Free: 1- (800) -468-1160

UTAH PSYCHIATRIC ASSOCIATION
540 East 500 South
Salt Lake City, Utah 84111
Phone: 355-7477

UTAH PSYCHOLOGICAL ASSOCIATION
640 East Wilmington Ave.
Salt Lake City, Utah 84105
Phone: 466-3559

CHILDREN'S SPECIAL HEALTH SERVICES
288 North 1460 West
Salt Lake City, Utah 84116
Phone: 538-6165

UTAH LEARNING RESOURCE CENTER
Carriage Hill Office Building
2290 East 4500 South, Suite #220
Salt Lake City, Utah 84117
Phone: 1-(800)-662-6624

*This list is representative, not inclusive.

POINTER BOX 10

Parent Training Programs & Books*

FOR STUDENTS WITH ADD

FAMILIES
by G. Patterson
Research Press
2612 N. Mattis Avenue
Champaign, IL 61821

PARENTS AND ADOLESCENTS LIVING TOGETHER
by G. Patterson & M. Forgatch
Castalia Publishing
P.O. Box 1587
Eugene, OR 97440

SOLVING CHILD BEHAVIOR PROBLEMS AT HOME AND SCHOOL
by E. Blechman
Research Press
2612 N. Mattis Avenue
Champaign, IL 61821

SOS: HELP FOR PARENTS
by L. Clark
Parents' Press
P.O. Box 2180
Bowling Green, KY 42102-2180

DEFIANT CHILDREN: A CLINICIAN'S MANUAL FOR PARENT TRAINING
by Russell A. Barkley
The Guilford Press
72 Spring Street
New York, NY 10012

YOUR HYPERACTIVE CHILD: A PARENT'S GUIDE TO COPING WITH ADD
by Barbara Ingersoll, Ph.D.
Doubleday
666 Fifth Avenue
New York, NY 10103

MAYBE YOU KNOW MY KID
by Mary Cahill Fowler
Carol Publishing Group
Sales & Distribution Offices
120 Enterprise Avenue
Secaucus, NJ 07094

ATTENTION DEFICIT HYPERACTIVITY DISORDER: QUESTIONS & ANSWERS FOR PARENTS
by Gregory S. Greenberg & Wade F. Horn
Research Press
2612 N. Mattis Avenue
Champaign, IL 61821

HYPERACTIVITY: WHY WON'T MY CHILD PAY ATTENTION?
by Sam Goldstein & Michael Goldstein
John Wiley & Sons, Inc.
Professional and Trade Division
605 Third Avenue
New York, NY 10158-0012

*This list is representative, not inclusive.

FAMILY INTERVENTIONS FOR STUDENTS WITH ATTENTION DEFICIT DISORDERS

The families of students with ADD often have difficulty around several issues. Siblings often do not understand why a brother or sister takes so much time and causes so much difficulty. Parents are frequently frustrated by the child's difficult behavior at home and in public. They often describe their child as always on the move, inattentive, argumentative, acting before thinking, and accident prone. At the same time, these parents agonize about their child's future. Social problems with friends, a disorganized approach to life, and frequent school problems worry parents about the child's future. In addition, parents are often puzzled why they may have apparently average children and then a child with ADD. What did they do? Did they contribute to or cause the disability?

An information-based approach at helping parents is important and schools can be instrumental with this approach. Getting an accurate diagnosis with practical assessment can be immensely helpful. Understanding that ADD is a biological disability relieves many parents of their concern about cause. Belonging to a parent support group helps parents understand that they are not the only ones with a child with ADD. Practical skills that help a parent manage behaviors in the home and contribute to school success can be critically important. Many of these approaches can be supplied through parent training groups provided by schools or parent self-help groups.

(1) PARENT TRAINING

Good parent training programs for the parents of students with ADD should be practical and target significant behaviors. Parent training approaches that rely on technical jargon and complex data collection procedures are bound to fail. Similarly, parent training approaches that only emphasize communication-based skills and reasoning are fine for mild child problems but fail miserably with the ADD student's difficult behaviors. Good parent programs target difficult behaviors for systematic change which include noncompliance, arguing, aggression, poor school performance, and problems with social skills. These programs help parents practice the skills learned in the group through homework assignments that over time evolve into an individualized behavior management program for their child. Several programs teach parents to be effective rewarders, give precision requests, and follow through with preplanned consequences. Many parenting programs help parents design behavioral contracts and set up management systems in the home to help with household chores. School-hosted parent training programs can help parents in starting home-to-school notes, designing a homework program, or helping parents become effective tutors for their child. Pointer Box 9 gives a list of commercially available parent training books and programs which offer excellent skills to parents. There is also a book to give siblings some understanding in having a brother or sister with ADD listed in Pointer Box 10.

(2) STUDENT COUNSELING

Most students with ADD know they are different. This realization is particularly difficult for adolescents who strive to "fit in," but their behavior separates them from their peers. Depression about being different and anxiety concerning school or parental expectations is common for students with ADD. Counseling students can be helpful especially if the counselor understands the ADD disability and the student's need for confidentiality and nonjudgmental support. It often helps if the counseling starts with establishing a relationship and

then shifts to building specific skills that will help the student adjust in other settings. Counselors who also conduct a social skills group or can help with study skills may be particularly useful. It may also help to give the student insight into the ADD disorder through books. Pointer Box 10 gives a list of book titles that are useful for students with ADD.

STIMULANT MEDICATIONS

The use of stimulant medication either alone or in combination with other procedures is the most widely used intervention for students with ADD. Stimulants have been used since the 1930s and widely used in the past 20 years. There is excellent data on their effectiveness, side effects, and best practice use. Even with this excellent history, stimulant medications are still controversial with many misconceptions and rumors circulating about their use. One misconception is that if a student shows a positive response to stimulant medication, then the student is ADD. The response to the medication is not diagnostic. Approximately 25 percent of average students without ADD also show a positive response (improved concentration) to stimulants (Rapoport, Buchsbaum, Weingartner, Zahn, Ludlow, & Mikkelsen, 1978). Another misconception is that stimulant medications are associated with extreme

POINTER BOX 11

Book Titles*

FOR STUDENTS WITH ADD

MY BROTHER'S A WORLD-CLASS PAIN...A SIBLINGS'S GUIDE TO ADHD/HYPERACTIVITY
by Michael Gordon, Ph.D.
GSI Publications
P.O. Box 746
DeWitt, NY 13214

JUMPIN' JOHNNY GET BACK TO WORK! A CHILD'S GUIDE TO ADHD/HYPERACTIVITY
by Michael Gordon, Ph.D.
GSI Publications
P.O. Box 746
DeWitt, NY 13214

EAGLE EYES: A CHILD'S VIEW OF ADD
by Jeanne Gehret, M.A.
Verbal Images Press
19 Fox Hill Drive
Fairport, NY 14450

SHELLEY THE HYPERACTIVE TURTLE
by Deborah Moss
Woodbine House, Inc.
5615 Fishers Lane
Rockville, MD 20852

PUTTING ON THE BRAKES
by Patricia O. Quinn & Judith M. Stern
Magination Press
19 Union Square West
New York, NY 10003

MAKING THE GRADE: AN ADOLESCENT'S STRUGGLE WITH ADD
by Roberta N. Parker
Impact Publications, Inc.
300 NW 70th Avenue
Plantation, FL 33317

*This list is representative, not inclusive.

side effects (e.g., increased likelihood of drug abuse, aggression, suicide). If the medication is prescribed appropriately, the side effects have been well studied in children and adolescents and are well within reasonable limits. The actual side effects will be described later in this section. Another misconception is that during puberty, the effectiveness of stimulants wanes. The effectiveness of stimulants continues through adolescence for many students with ADD, and they may be effective into adulthood.

Are stimulants effective for students with ADD? These medications do not cure ADD-type behaviors, rather, they offer a viable management technique. Careful research studies using control groups, double blind procedures, and placebos clearly indicate the positive effects of stimulants for students with ADD. Approximately 70-80 percent of students with ADD show an improvement when given appropriate doses of stimulants (Barkley, 1990). These improvements generally occur with increased attention, decreased impulsivity, and a reduction in fidgety motor behavior. Other reported improvements have occurred in improved social interactions and higher compliance rates to parent and teacher requests. Some long-term research has shown that students with ADD who were on stimulant medications had a significantly more positive view of their school experience than students with ADD not on stimulants (Weiss & Hechtman, 1986). This is probably a result of a general reduction of negative feedback (from peers, teachers, and parents) due to an improvement in attention and a reduction in impulsivity. Interestingly, adolescents with ADD who were on stimulants also had significantly fewer car accidents than students with ADD not on stimulants (.62 accidents vs. 1.5 accidents). This contrasted effect may also be due to the improvement in attention and reduction in impulsivity.

There is some controversy about the improvement in academic achievement due to stimulants. Frequently, teachers report a significant improvement in academics. However, this may be a misperception in the long term. Teachers may misinterpret improved attention as an improvement in academic achievement. Also, there may be some temporary improvement in academics, particularly mathematics. However, in the long term there is no evidence that stimulants alone improve academics in grades, grades passed, or achievement levels. Reason suggests that if a student with ADD has long-standing deficits in basic academic skills, then no medication will, by itself, improve these deficits. There are no smart pills, and medications are not academic programs. Stimulant medications offer a "window of opportunity" to use effective instructional techniques to improve these skill deficits. It is a disservice to a student with ADD to assume improved attention equals improved academic performance. Good academic assessment techniques such as curriculum-based assessment and portfolio assessment should be the standard of comparison. Once a student with ADD starts to attend school, the majority will still need additional instructional help to catch-up, learn study skills, and consistently do their homework.

TYPES OF STIMULANT MEDICATIONS AND DOSAGE

There are three basic types of stimulant medications used for students with ADD, Ritalin, Dexedrine, and Cylert. There has been some concern that stimulant medication is overly prescribed at an ever-increasing rate. However, the national and Utah data do not support this assumption. The prevalence rates for medication treatment for students with ADD are relatively stable and range from .75-2.6 percent of the population. A Utah myth is that stimulants are used more frequently in Utah than any other state. The usage drops to approximately the national average when family size is factored into the calculations (McMahon, 1992).

- **Ritalin** (methylphenidate) is the most frequently prescribed stimulant medication. Ritalin comes in 5, 10, and 20 milligram doses with a sustained release (Ritalin-SR) 20 milligram dose. The actual dose is generally first prescribed by weight with .3 mg for each kilogram (2.2 lbs) of the student's weight up to .9 mg per kilogram. Doses may be slowly increased (titrated) up to the .9 mg per kilogram level to find an optimal dose. Above this level, classroom conduct may improve, but learning ability may be reduced. However, each student has an individual response to the medication dose and results vary. A 70-pound (32 kilograms) student might be prescribed 10 mg dose twice per day. The medication typically shows an effect within 30 minutes and reaches peak blood levels in two to three hours. A second dose around lunch time may be necessary for most students with ADD, particularly for afternoon performance. Ritalin-SR (sustained release) can be useful for students who will take only one dose. However, the Ritalin-SR release is variable and may overdose a student in the morning and under dose him in the afternoon. Generic Ritalin may reduce the overall cost of the medication for parents. But some generics may not work as well as CIBA Ritalin due to differences in binding agents in the medication. Again, results vary for each child.

- **Dexedrine** (dextroamphetamine) is used less often than Ritalin. However, indications are that it is equally effective. Dexedrine is approximately twice as potent as Ritalin requiring half the dose. The absorption rate of Dexedrine into the bloodstream is also about half the rate of Ritalin, so it may be necessary to take the initial dose earlier in the morning.

- **Cylert** (pemoline) is a third choice stimulant medication that requires only one dose per day in the morning. The effects are similar to Ritalin and Dexedrine except that it may require several days or even weeks to be seen. The basic disadvantage of Cylert is the need for systematic monitoring of the drug's effects on liver functioning. Ritalin and Dexedrine do not require this blood level monitoring.

No one knows why stimulant medications work with students with ADD. It is generally assumed that the neurochemistry of students with ADD is different from other children. Stimulants appear to affect the neurotransmitters in the brain at the synaptic level (where neuron cells meet). Stimulants may make these synaptic connections more efficient in transmitting information which in turn affects behavior.

It should be noted that if a student with ADD does not show a positive result with one type of stimulant (i.e., Ritalin), then another type (i.e., Dexedrine) may work. General practice is to wait a short time and give the other medication a trial. The positive effects of Ritalin and Dexedrine should be evident within hours, and these medications are generally out of the system within a day. Cylert takes longer to produce a clinical result and may be in the system for several days.

SIDE EFFECTS OF STIMULANTS

All medications have side effects. Penicillin can cause allergic reactions that can result in death, and common aspirin can cause severe stomach hemorrhaging. Most of the side effects of stimulant medications are less severe and have been studied for years. For short-term side effects, the four most common are loss of appetite, sleep problems, stomach aches, and rebound irritability. Loss of appetite generally subsides within a month and sleep problems can be decreased if the medications are not given past 3:00 p.m. Stomach aches can generally be avoided by giving the medications 15 minutes prior to a meal (Ritalin causes this side effect less than Dexedrine). Rebound irritability includes tearfulness, fidgeting,

and irritability which can be particularly difficult for parents. The rebound effects last one to two hours and occur approximately four hours after the medication has been given and is wearing off. It is wise for parents to make allowances in their expectations for this brief period (i.e., no piano practice, chores, or homework). The good news is that most short-term side effects generally decrease or disappear one to two months after the medications are started.

Long-term side effects of stimulant medications are more rare but can increase with the length of time the student is on the drug or with increased dosages. Loss of height and weight can be a concern for parents, and this is a long-term side effect of stimulant medication. Losses in height are measured in one or two centimeters and not in inches. "Medication holidays" and taking the student off medication for the summer often results in growth spurts where students catch-up in height and weight. Tics (involuntary muscle movements or vocal utterances) are more of a problematic side effect of stimulants, particularly for Tourette syndrome (described earlier). It is estimated that fewer than one percent of students treated with stimulants develop a tic disorder, and that in 13 percent of pre-existing tic cases, stimulants may make the disorder worse (Barkley, 1990). Prudent clinical practice suggests that stimulants not be prescribed for children with pre-existing tics or Tourette's syndrome cases. Other nonstimulant-type medications can be effective for students with tics. Additional, rare, long-term side effects include depression and paranoid thinking. In these situations, the effects may be caused by a predisposition for these conditions or high dosage levels.

CONCLUSIONS ABOUT STIMULANTS AND ADD

Stimulant medications clearly improve the behavior of a majority of students with ADD. These improvements can have a significant impact in the management of students with ADD. However, stimulants should be viewed as only **part** of a more comprehensive treatment program. Stimulants will not cure poor social skills, learned patterns of negative behaviors, or academic deficits. They will improve attending and reduce impulsivity so these other management and instructional programs can make more of an impact. The other programs should include both school and home interventions.

Controversial Treatments/Interventions

As we mentioned at the beginning of this document, ADD is a controversial area with many controversial treatments/interventions. These approaches can be harmful when they preclude or delay more effective treatments/interventions, or they are costly (both time and money) to the family or school. The controversial treatments/interventions have several common characteristics. First, their introduction is often through the popular media and announced as a "break through." Most often, these approaches are based on a theory that is naturally-based but not consistent with current scientific knowledge. Second, they may sound scientific. However, on closer scrutiny, they lack objective scientific evaluation and their support is generally anecdotal. Third, they are often defended as being naturally-based. Thus, they are promoted as being effective with a broad range of problems and have essentially no negative side effects. Fourth, many of these treatments/interventions are supported by lay organizations who blame the lack of acceptance of a controversial treatment/intervention on the conservatism of the medical community and the slow pace of scientific research. These organizations often aggressively proselytize for the controversial approach, and they try to develop special interest legislation and regulations to promote it.

DIETARY INTERVENTIONS

The best known dietary intervention is the Feingold Diet which was introduced in the book, *Why Your Child is Hyperactive* (Feingold, 1975). This book was based on the anecdotal experiences of a California pediatrician who stressed the benefits of an additive free diet for children. Claims were made that as many as 50 percent of children with ADD would experience dramatic behavioral improvements if additives (food colorings, artificial flavorings, preservatives, and salicylates) were removed from their diets. Actual research has shown that only 5-10 percent of students with ADD will improve with this diet. It is also unclear if this approach is superior to more conventional treatments (Conners, 1980; Hamer, & Forbes, 1980; Holbrrow, Elkins, & Berry, 1981; Ross & Ross, 1982; Silvers, 1986). Wender (1986), after reviewing 13 controlled studies on the Feingold diet, concluded their is little evidence to support the diet. The costs to parents in time, money, dietary supervision, and food preparation does not support the Feingold approach.

On the popular quiz show, "Jeopardy," the answer "What is sugar?" was offered as the correct choice for the question: "It is the major cause of hyperactivity in North America." However, the answer was **wrong**. Although the popular media have spread the lay opinion that sugar causes ADD, not a single scientific study supports the claim (Barkley, 1990). The effects of sugar on ADD have not been demonstrated in controlled studies (Gross, 1984; Wolraich, Milich, Stumbo, & Schutz, 1985).

Similar to food additives and sugar claims is the notion that large doses of megavitamins or minerals are purported to have dramatic treatment effects for students with ADD. The theory is that children with ADD have genetic abnormalities that produce a body need for specific nutrients greater than the general population. There is no evidence that megavitamin therapy is helpful to students with ADD and may result in toxicity if some vitamins are given in large doses (Golden, 1984).

THE MINIMAL STIMULATION CLASSROOM

It seems plausible that if students with ADD are easily distracted, then they should be screened from extraneous noise and distractions. The effectiveness of a minimal stimulation approach is limited. Extensive screening that puts students with ADD in their own "offices" (rooms) away from the classroom, behind partitions, or stuck in screened corners generally makes inappropriate behaviors **worse**. The minimal stimulation classroom has no research to prove its effectiveness (Ross & Ross, 1982). Frequently, students with ADD put in these environments actively increase their inappropriate behavior in seeking stimulation.

Other controversial theories of treatment include the effects of radiation from fluorescent lights, allergies, chronic fatigue syndrome, and neurophysiological patterning. These theories also have no credible scientific evidence of support. At best, they delay effective interventions. At worst, they may actually harm a student with ADD.

Recommendations & Conclusions

1. Attention Deficit Disorder is a complex and commonly misunderstood medical condition that can affect the academic and social adjustment of students.

2. Attention Deficit Disorder is a "... disorder of developmentally inappropriate degrees of inattention, impulsivity, and overactivity which arise in childhood and is relatively chronic throughout adolescence" (p. 47) (Barkley, 1990).

3. Attention Deficit Disorder is a biologically-based, multiply-caused medical condition. The social or psychological environments do not cause this medical condition, although they can exacerbate the degree of the behavioral problems.

4. All students with Attention Deficit Disorder who have their academic and social progress significantly and adversely affected by the disorder need a comprehensive assessment that includes multiple measures, multiple evaluators, in multiple settings. The evaluation should be focused on diagnosis, placement, interventions, and an evaluation of the student's progress.

5. Interventions applied to students with Attention Deficit Disorders should be scientifically valid procedures that are geared to manage and improve the core behavioral characteristics (inattention, impulsivity, and overactivity) and the associated characteristics (noncompliance, self-management problems, academic deficits, and social skills deficits).

6. Currently, there are no cures for Attention Deficit Disorder and the emphasis is on successful management of the medical condition. Coordination between the school and home is critical for the successful management of the medical condition.

7. Many school districts are providing parent training relative to a variety of conditions and disabilities which affect school performance. It is recommended that Attention Deficit Disorders be added to those currently being addressed.

8. As with other conditions and disabilities affecting school performance, it is recommended that school districts provide basic inservice training and staff development on Attention Deficit Disorder to teachers, administrators, related service personnel, and support staff. The inservice information should include the basic characteristics of ADD, causes, identification, and interventions information.

9. It is recommended that institutions of higher learning include and integrate information about Attention Deficit Disorder in their courses.This information should include information about the general nature, assessment practices, and appropriate interventions.

10. It is recommended that an interagency committee be established to assist in the coordination of services for and education about students with Attention Deficit Disorder. These agencies should include the Utah State Office of Education, Utah Social Services, selected school districts, parent advocacy groups, practitioners, and interested local hospitals.

11. The Utah State Office of Education (USOE) should serve as an information clearing house for At-

tention Deficit Disorder. This information base could serve as a foundation for school district inservice training and consumer resource guides for parents.

References

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A RESOURCE FOR EDUCATORS AND PARENTS

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This document is partially based on State of Iowa and State of Virginia guides and draws on materials from both.